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2. Patent application number
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3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

JOHN NORTH
21 BRIAR COURT, GUARDIAN ROAD,
NORWICH, NORFOLK, NR5 8PR.

Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation

7482763001

4. Title of the invention

PRESSURE WASHING AND VACUUM DRYING MACHINE FOR GARMENTS

5. Name of your agent *(if you have one)*

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

HYDRATHERM ENERGY INTERNATIONAL
21 BRIAR COURT, GUARDIAN, ROAD,
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Patents ADP number *(if you know it)*

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Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*
GB	9906800.9	25/3/99 MJF.

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day / month / year)*
~~GB 9906800.9~~	~~25 MARCH 1999~~

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6	Description	9 SHEETS
2	Claim(s)	13 ON 2 SHEETS WITH DESCRIPTION
1	Abstract	1 WITH DESCRIPTION
10	Drawing(s)	10 SHEETS (21 DRAWINGS)

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Priority documents

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Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*

Request for preliminary examination and search *(Patents Form 9/77)*

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11. I/We request the grant of a patent on the basis of this application.

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U.K. PATENT SPECIFICATION
PENDING PCT APPLICATION

NORTH March 1999

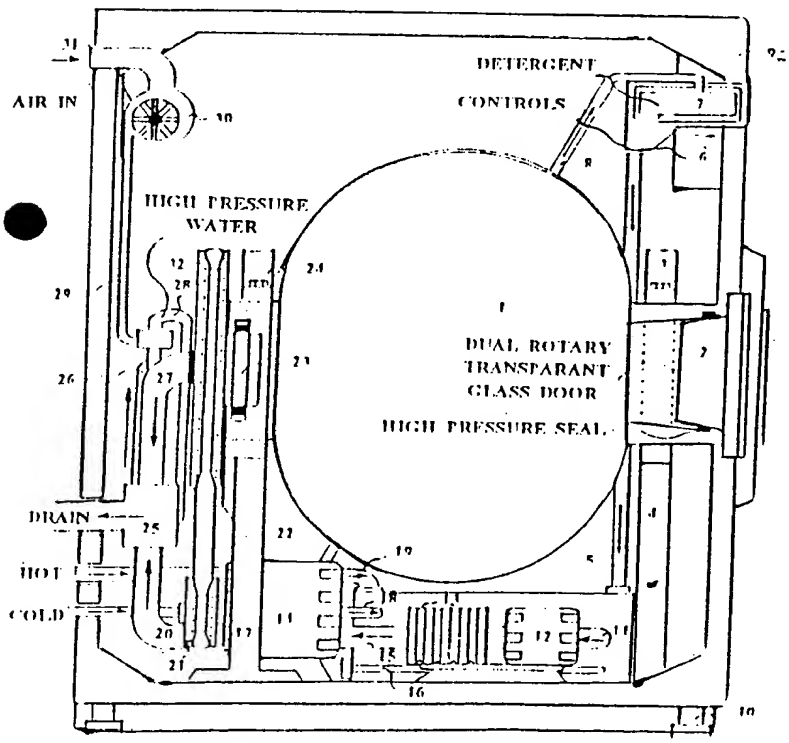
PRESSURE WASHING AND VACUUM DRYING MACHINE FOR GARMENTS

Patent Application Number GB 9906800.9
Filed March 25 1999
Priority Patent Application Number GB 9907304.1
Filed March 31 1999
Priority Patent Application Number GB 99
Filed April 29 1999
Inventor John North. c/o Hydratherm Energy International, 21 Briar Court, Guardian Road, Norwich, Norfolk, NR 58 PR

PATENT DOCUMENTS CITED

EP 0823503	Miele & CIE	1998-02-11
GB 2075559	Miele & CIE	1981-11-18
WO 9820195	Miele & CIE	1998-05-14
GB 2300700 A	Electrolux Zanussi	1996-11-13
EP O816548 A	Candy S.p.a.	1998-01-07

FIGURE 1



DOCUMENTS, REFERENCES CITED

Wonder Clean

ABSTRACT

The invention relates to a pressure washing and vacuum drying machine for garments. It comprises a rotating capsule drum with a twin cylindrical central section and convex dished outer ends.
The axis of the capsule is perpendicular to the axis of rotation, which is midway along the capsule.
The delivery and suction ducts pass through the central axis rotary joint, opposite the pressurised rotary dual front loading transparent glass door.
The hot water and detergent is defused through the filter, creating gas pressure due to the rotation and tumbling action. This causes the gases and suds to permeate the garments releasing the dirt and stains, the washing cycle is greatly enhanced, reducing the time and energy consumption by 96%.
The pressurised capsule has a central sleeve filter screen which has fine perforations to protect the laundry, whilst ensuring that residual water is emptied, by suction, during the rinse and dehydration drying cycle of 1 to 2 minutes, via the high vacuum pump, to create a strong suction force.
The washing, rinse and drying cycle is 5 to 8 minutes.

13 Claims and 21 Drawings

PRESSURE WASHING AND VACUUM DRYING MACHINE FOR GARMENTS

FIELD OF INVENTION

The invention concerns a hybrid combined laundry washing and drying machine which uses a pressurised capsular washing drum and a high-vacuum dehydration strong-suction drying cycle.

BACKGROUND OF THE INVENTION

The invention falls into the field of domestic and industrial washing and drying machines.

All existing washing and drying machines operate at a negative pressure using a rotary drum, with either top or front loading.

The method of washing clothes within a gas tight container is not a new idea, but was first patented under the name Wonder Clean. This unit is a small table / top portable washer and is hand operated.

The invention herein describes a fully automatic and electrically operated capsular drum washing machine. It is more advanced than anything on the market.

The system utilizing a pressure pump which rapidly increases the vapour pressure. The drum is capsular with a central fine sieve type filter screen.

The drying cycle of current machines works by condensation formed with hot air that is blown into the drum. This removes the moisture contained in the garments.

Conventional washing machines are all designed in a known manner with electric motors and heaters, as described by the patents cited.

The invention yields approximate 96% time and energy saving, due to the pressurised action of the capsule washing drum which rotates and tumbles the laundry derives from

the axis of the capsule being perpendicular to the axis of rotation.

The high-vacuum pump, provides a strong-suction dehydration action for the rinse and drying cycles.

SUMMARY OF THE INVENTION

The present invention employs a pressurised capsule washing drum, (any shape) with convex dished outer ends, with one or two end sieve- type filters with internal conduit suction ducts, or a central internal cylindrical high- vacuum raised sleeve-shaped filter sieve- type finely perforation screen. The filter(s) protect(s) the laundry whilst ensuring that all residual water is emptied by suction during the rinse and continuous dehydration drying cycle, this takes place via the pressurised three-port conduit high-vacuum pump, that creates a strong-suction force above 760 mm Hg.

The vacuum jet pumping apparatus operates via a venturi tube with peripheral air ducts set around the outside of the venturi outlet. This arrangement accelerates the flow. The venturi tube is connected to the branch inlet, at the centre point of the 90° bend radius, relative to the centreline of the tube o/d, to provide a strong suction for vacuum.

The centrifugal pump delivers the water through the venturi supply tube at between 150 psi to 300 psi, depending on the (application domestic or industrial.)

The centrifugal air blower feed tube is connected to the peripheral air chamber to control air flow around the venturi, which in turn controls the suction force. Atmospheric pressure at 14.72 psi generates the highest vacuum; an increase in pressure causes cavitation within the flow and reduces the strength of the vacuum from 760 mm Hg to 300 mm Hg.

The suction force is controlled through the air pressure relief valve, (not shown.)
The vacuum, temperature and pressure will be displayed via a LCD or similar technology on the front panel of the washing machine. The user is then able to see which of the programs has been reached, and to control conditions at a glance, in conjunction with the rest of the standard controls.
The axis of the capsule washing drum is perpendicular to the axis of rotation, which is midway along the capsule.
The pressurised delivery and vacuum suction ports in the solenoid valve pass through the central axis rotary joint fitted to the rear capsule rotation shaft and sub-frame.
The opposite side of the capsular drum contains the front large diameter cylindrical rotation shaft with its laundry loading aperture.
The two capsule drum rotary drive shafts are retained by two split bearing blocks mounted on the sub-frame.
This allows the capsular drum to be rotated by an electric motor by means of a drive belt at slow speed.
The laundry rotary loading aperture is fitted with a twin construction door providing a inner pressure-sealed concave plug-type glass door. The inner door rotates within a special seal tight rotary bearing and housing attached to a hinged stationary outer transparent laundry loading door.
The fine-sieve type perforations within the central raised filter screen allow the incoming pressurised hot water, detergent and steam to provide diffusion of the liquid for a fast gaseous reaction inside the capsule, due to the water gaining heat energy by the liquid mixture being forced through the multi apertures fine sieve filter. This gives a sprinkler jet action for the

as-liquid mixture and yields optimum gaseous state washing results.
Because of the rotation of the capsule and its shape, hot water detergent and garments are tumbled from one end to the other under gravity, creating pressure.
The gases expand on heating. The density of the gases is the mass compared to liquid, this produces pressure within the capsule, causing the gases and suds to permeate through the garments releasing the dirt and stains.
The washing cycle is greatly enhanced and the cycle time is reduced from 80 minutes to 3 to 5 minutes.
The rinse and drying cycles use a strong suction provided by the Air-hydro dual conical venturi jet high vacuum pump, which creates a strong suction above 760 mm Hg, reducing the pressure of the gases in the capsule.
The strong suction coanda effect gathers the garments to the central fine filter section of the capsule, or in the case of the top loading machine to the lower end, with an internal conduit for drawing the vacuum. This always stops with the laundry loading aperture to the top due to the combined action of vacuum and gravity.
This produces a fast dehydration of all the liquid, gases (moisture) and any particulates or fluff inside the capsule washing drum.
No filters or strainers are required the vacuum continually keep the capsular washing drum clean and all particulates are washed out through the water drain outlet.
The cycle time for drying is reduced from 2 x 2.5 kg loads = 120 minutes, to between 1 to 2 minutes for a 5 kg load.
All washing water is drawn out by suction from the capsule washing drum after each cycle via the special vacuum pump, then discharged via the outlet hose to the drain.

The capsular washing machine is ideal offshore, on ships, sailing vessels and the like, as it is unaffected by wave motion.

OBJECT OF THE INVENTION

The principal object of the invention is to minimize energy use and to reduce the pressure washing and vacuum drying cycle times from 200 minutes, these drop to 5 to 8 minutes, a time saving of 192 minutes. Further objects and advantages of the present invention will become apparent when the description is read in view of the accompanying drawings which are made a part of this specification.

1 : Smaller electric motor; drive speed only 50/60 rpm.

2 : Minimal water consumption, 25/30 ltres for 5 kg load.

3 : Vriable temperature short wash, rinse and drying cycles, automatic crease guard action high pressure rinse cycle. Washing is accomplished within 3 to 5 minutes, rinse takes 1 minute and vacuum drying 1 to 2 minutes.

4 : Fabric care with gentle rotation. And the fact that no heat is required for drying.

5 : The machine gives a superior wash and dry to the present class "A" wash and dry claims, with all load weights, due to the pressure of the gases permeating the garments.

6 : The efficiency of the pressurised gases permeating the garments, due to the diffusion of the liquid when washing. And vacuum used for drying saves water, electricity and detergent.

7 : Drying is by dehydration, controlled by a variable strong suction due to the high vacuum. No heat for drying reduces wear and tear on garments.

8 : Low electrical energy consumption, 400 washes per year with the present system uses 2,216 kWh year, at .07 pence per kWh = £156.00 per year saving.
The present Invention would use 130.36 to 208.56 kWh year at a cost of £9.13 to £14.60, a saving of 96%.

9 : The machine has a very low water consumption per year, present 15,000 ltres, new 5,000 to 6,000 ltres.

10 : The design has eliminated the age-old problem of vibration in washing machines. The lightness of the new design enables ease of movement. And transportation.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows : a side elevation view partially in section of a capsule washing drum front loading machine.

Figure 2 shows : a top longitudinal elevation view partially in section of a capsule washing drum.

Figure 3 shows : a radial elevation of a capsule washing drum, through the central section A-A of the internal sleeve fine suction filter.

Figure 4 shows : a front elevation partially in section of a capsule washing drum machine.

Figure 5 shows : a schematic sectional view of a rotary swivel joint connected to the vacuum venturi pump.

Figure 6 shows : a diagrammatic view partially in section of a venturi vacuum jet pump.

Figure 7 shows : a schematic of a centrifugal pump for suction control.

Figure 8 shows : a side elevation view partially in section of a capsule washing drum top loading machine.

Figure 9 shows : a diagrammatic view of a pressure/vacuum capsule washing drum machine with controls.

Figure 10 shows : a diagrammatic view of a front display panel.

Figure 11 shows : a top elevation cross section view of a glass transparent pressure/vacuum rotational sealing inner plug door and stationary transparent outer door.

Figure 12 shows : a axial cross section of a compression spring.

Figure 12A shows : a radial cross section of Figure 12.

Figure 13 shows : a bearing circlip.

Figure 14 shows : two sets of split bearing shells.

Figure 15 shows : a radial section of a backing ring.

Figure 15 A shows : a axial section of the opposite backing ring.

Figure 16 shows : a axial section of a thrust ring.

Figure 17 shows : a top longitudinal elevation view of a capsule washing drum.

Figure 18 shows : a radial cross section of a capsule washing drum.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Figure 1 : is a side elevation view partially in section of a capsule washing drum machine and illustrates the disclosed preferred embodiment of the apparatus assembled in accordance with the present invention for washing and drying garments. Showing outer cabinet shell Item 9, adjustable leveling feet Item 10, capsule washing drum Item 1, dual rotary transparent glass door Item 2, bearing block retaining axial drive shafts Item 3, and 24, support frame for capsule drive shafts Item 4, and 17,water and detergent supply tube to heater tank Item 5, water heater Item 16, controls Item 6, detergent drawer Item 7, water supply to drawer Item 8, suction inlet to pump from heater tank Item 11, electric motor Item 12, drives water -detergent pump Item 13, water-detergent supply tube Item 15, 26, and 20, to control valve and drain outlet Item 25, for supply to the capsule washing drum through the solenoid valve - rotary swivel joint Item 23, vacuum tube Item 27, venturi tube Item 28, air supply tube Item 29, centrifugal air motor/pump Item 30, air inlet to pump Item 31, electric drive motor and reduction gearing Item 14, motor drive pulley Item 21, capsule washing drum drive pulley Item 32, drive belt Item 22, hot water in Item 19, cold water in Item 18.

Figure 2 : discloses a top longitudinal elevation view partially in section of a capsule washing drum showing axial drive shaft side Item 1, loading side Item 2, supply and suction ports Item 3, washing inlet Item 4, wall of capsule Item 5, fine sieve type perforations Item 6, in the central filter sleeve Item 7, inside capsule washing drum Item 8.

Figure 3 : discloses radial cross section of the capsule washing drum through section A-A inside Item 7, wall of capsule Item 6, central filter sleeve Item 5, axial drive shafts Item 2, and 3, washing inlet Item 1, supply and vacuum inlet Item4.

Figure 4 : discloses a front elevation cross section of a capsule washing drum machine showing cabinet frame Item 1, control panels Item 2, and 3, water supply inlet.

Item 4, detergent mixing drawer Item 5, supply tube to heater tank Item 8, cold water supply tube to drawer Item 6, capsule washing drum Item 9, bearing block Item 10 and 11, retaining bolts Item 12, bearing or bearing material Item 14, washing inlet Item 22, axial drive shaft Item 13, electrical cable Item 7, capsule support frame Item 15, heater tank Item 17, electric motor and pump Item 20, capsule drive motor Item 21, drive belt Item 16.

Figure 5 : discloses a rotary swivel joint showing suction port Item17, stationary 90° inlet/outlet tube bend Item 7, rotary swivel fitted to the axial drive shaft on the capsule washing drum Item 10, male rotary body Item 9, female pin retainer Item 8, metal to metal outer seal Item 12, front seal Item 13 rear seal Item 16, central seal and retainer Item 11, and 14, bearing Item 15.

Figure 6 : discloses a schematic front elevation partially in section of a venturi jet high vacuum pump with a centrifugal air pump controller, to control suction strength, showing high pressure water inlet Item 19, venturi inlet Item 4, venturi aperture Item 3, centrifugal air pump Item 1, air inlet Item 18, air chamber Item 2, peripheral air ducts Item 5, branch venturi inlet Item 6, to center line of the 90°radius I/D tube bend Item 7.

Figure 7 : shows a schematic of a centrifugal pump Item 1, air inlet Item 18.

Figure 8 : discloses a side elevation view partially in section of a top loading capsule washing drum machine showing outer cabinet shell Item 9, adjustable leveling feet Item 10, capsule washing drum Item 1, press twist lock pressure cap Item 33, top loading door Item 2, rotary transparent glass door Item 2, bearing block retaining axial drive shafts Item 3, and 24, support frame for capsule drive shafts Item 4, and 17,water and detergent supply tube to heater tank Item 5, water heater Item 16, controls Item 6, detergent drawer Item 7, water supply to drawer Item 8, suction inlet to pump from heater tank Item 11, electric motor Item 12, drives water-detergent pump Item 13, water-detergent supply tube Item 15, 26, and 20, to control valve and drain outlet Item 25, for supply to the capsule washing drum through the solenoid valve rotary swivel joint Item 23, vacuum tube Item 27, venturi tube Item 28, air supply tube Item 29, centrifugal air motor/pump Item 30, air inlet to pump Item 31, electric drive motor and reduction gearing Item 14, motor drive pulley Item 21, capsule washing drum

drive pulley Item 32, drive belt Item 22, hot water in Item 19, cold water in Item 18.

Figure 9 : discloses a diagrammatic view of a pressure/vacuum capsule washing drum machine showing washing machine cabinet shell Item 7, dual loading door Item 6, and the controls Item 1, and 2, detergent loading drawer Item 3.

Figure 10 : shows a diagrammatic view of a front panel display, (sample only) showing an LCD or glow bar indicators Item 5, control dial Item 4.

Figure 11 : discloses cross section elevation view of a dual transparent inner rotary plug door and stationary transparent outer door showing capsule wall Item 12, inside capsule Item 15, fine perorations Item 16, central filter screen sleeve Item 14 bearing Item 10, bearing block Item 11, laundry loading port Item 13, pressure seals Item 7, outer cabinet shell Item 9, hinged door Item 3, hinge not shown transparent outer door Item 2, transparent inner door Item 1, bearing Item 6, retaining circlip Item 8, central dual door retaining unit Item 4, retaining countersunk screws Item 5, thrust pressure spring and backing rings Item 17.

Figure 12 : discloses a axial cross section of a circular sinuous or zig-zag type shape compression spring Item 1,with crests Item 3, and troughs Item 2. For applying continual pressure to the pressure seal around the laundry loading aperture with the dual inner door. For Figure 11 Item 17.

Figure 12 A : shows a radial cross section of Figure 12, that fits between the two thrust rings, for retaining pressure on the inner door seal, Figure 11, Item 7.

Figure 13 : shows a bearing retaining circlip Item 1, compression holes Item 2, for Figure 11, Item 8.

Figure 14 : shows bearing shells inner Item 1, and outer Item 2, with anti-rotation lugs Item 3, and 4, for Figure 11, Item 6.

Figure 15 : shows a axial section of a backing ring Item 1, with two anti-rotational kinks Item 2.

Figure 15 A : shows a axial section of the opposite side backing ring Item 1 with anti-rotational kinks Item 2.

Figure 16 : shows a axial section of a friction thrust ring Item 1.

Figure 17 : shows a top longitudinal elevation view partially in section of a capsule washing drum showing axial drive shaft side vacuum conduit Item 1, liquid inlet and outlet Item 2, vacuum inner conduit Item 3, wall of capsule Item 7, laundry inlet Item 5, capsule inner Item 6, sieve type filter screen Item 8, filter apertures Item 4.

Figure 18 : shows a radial cross section of a capsule washing drum through section A-A inside Item 6, wall of capsule Item 7, sieve type filter screen Item 8, fine filter apertures Item 4, vacuum conduit Item 3, vacuum duct Item 1, liquid inlet and outlet Item 2, laundry loading aperture Item 5.

Figure 19 : shows a laundry pressure washing and vacuum drying machine control system schematic.

THE EMBODIMENT OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED AS FOLLOWS :

Claim 1 : a method is claimed for the use of a capsule type washing drum (of any shape) with a pressurised door. With the axis of the capsule perpendicular to the axis of rotation, which is midway along the capsule.

Claim 2 : a method is claimed for the use of one or two end sieve type filters, with vacuum ducts or an internal central filter with fine holes or sieve type mesh filter screen to increase the acceleration and the gaseous content of the gas and the liquid mixture as it enters the capsule. The single end filter inside the capsule, enables the capsule drum, top loader always to stop in the vertical upright plane, and the central filter will also stop the capsule in the horizontal plane.

Claim 3 : a method is claimed for the use of a a transparent dual rotating inner door, connected to a stationary outer door, connected to a central member, for sealing against the cylindrical inner seal that is set inside the laundry loading aperture of the axial drive shaft of the capsule washing drum.

Claim 4 : a method is claimed for the use of a venturi type vacuum pump in a washing or drying machine. For emptying the washing liquid, rinsing water and for removing water and moisture from the garments

Claim 5 : a method is claimed for the use of a air pump to control suction strength in conjunction with a venturi type jet pump.

This provides for some moisture to remain within the garments if so required.

Claim 6 : a method is claimed for the use of a mechanical/rotary driven capsule type washing drum, front loading or top loading, with or without a vacuum drying system.

Claim 7 : a method is claimed for the use of a capsule type drum as disclosed within the patent for the use as a dry cleaning unit.

Claim 8 : a method is claimed for the use of a rotary swivel drive joint, with a delivery and discharge solenoid operated multi port valve (not shown) for use with a pressure capsule washing drum machine.

Claim 9 : a method is claimed for the use of a drive belt or gearing to rotate the capsule washing drum.

Claim 10 : a method is claimed for the use of a LCD or similar bright bar type displays as disclosed within the patent.

Claim 11 : a method is claimed for the use of a separate heater tank as disclosed within the patent or a combined inner and outer shell capsule as the heater tank.

Claim 12 : a method is claimed for the use a single lower sieve type filter screen and an internal type conduit to draw the vacuum within a top loading capsule washing drum, the garments inside would always drop to the bottom of the capsule by gravity, due to suction the moment the vacuum cycle starts, this will always place the loading aperture to the top of the machine, in the vertical upright plane.

Claim 13 : a method is claimed for the use of any type of sealing arrangement which can be used to provide a pressure seal between the inner rotating transparent glass door and the capsule washing drum as disclosed within the patent.

********** **********

.GURE 1

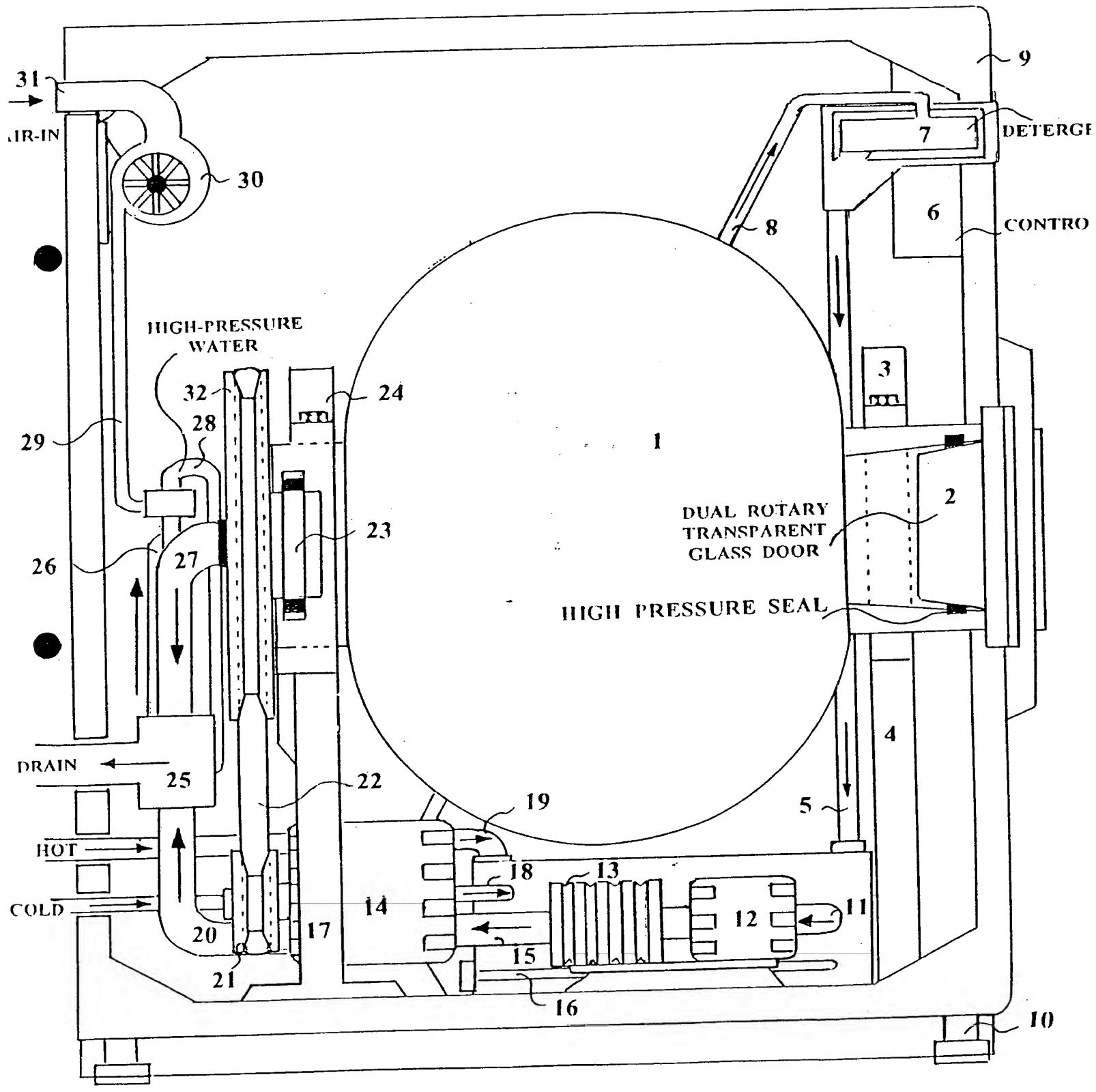

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FIGURE 3

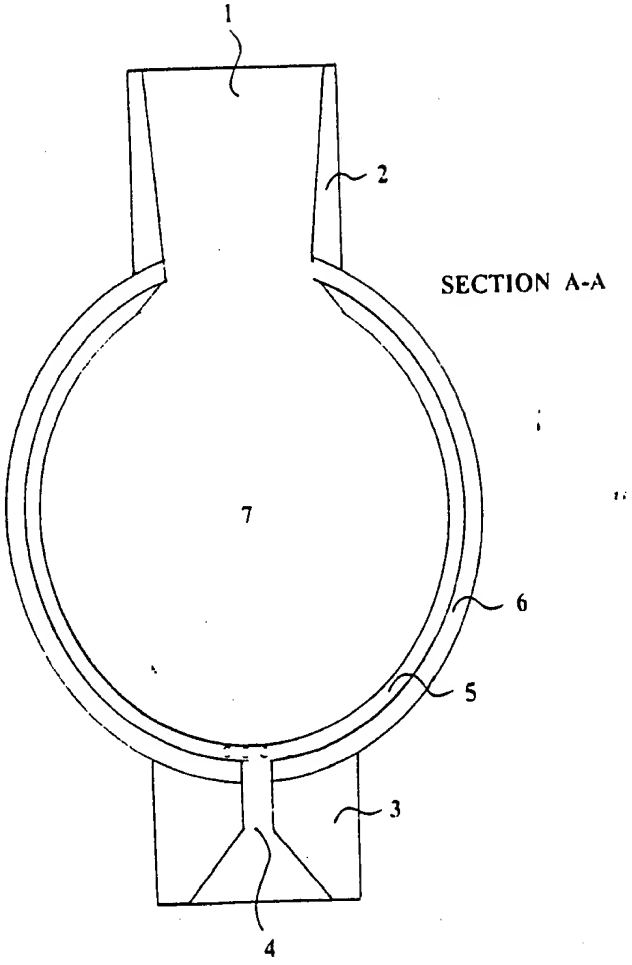


FIGURE 2

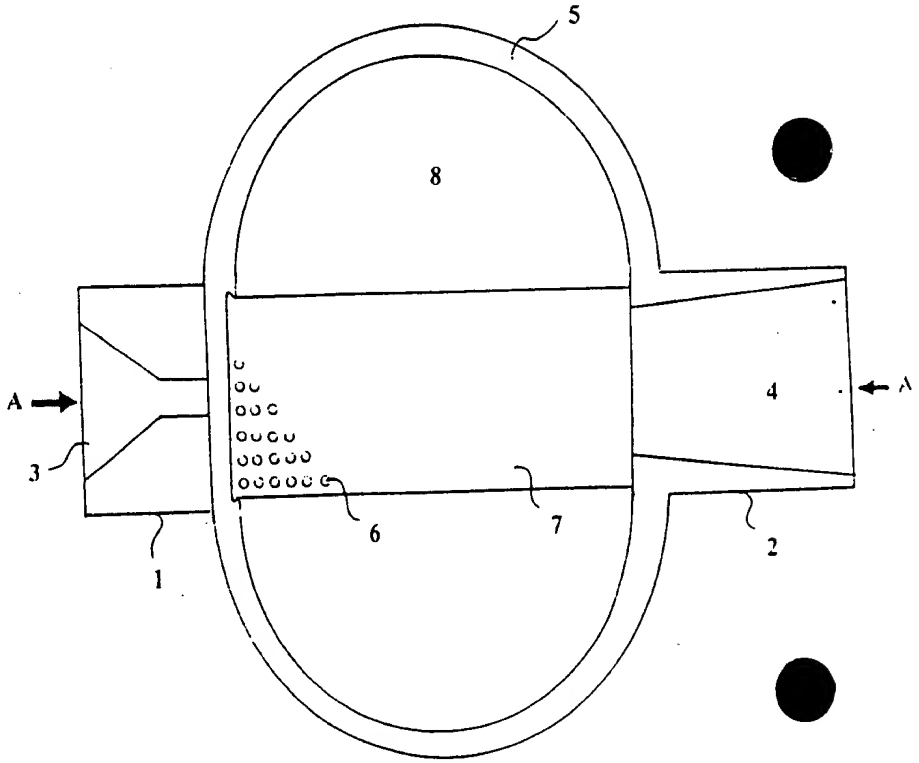


FIGURE 4

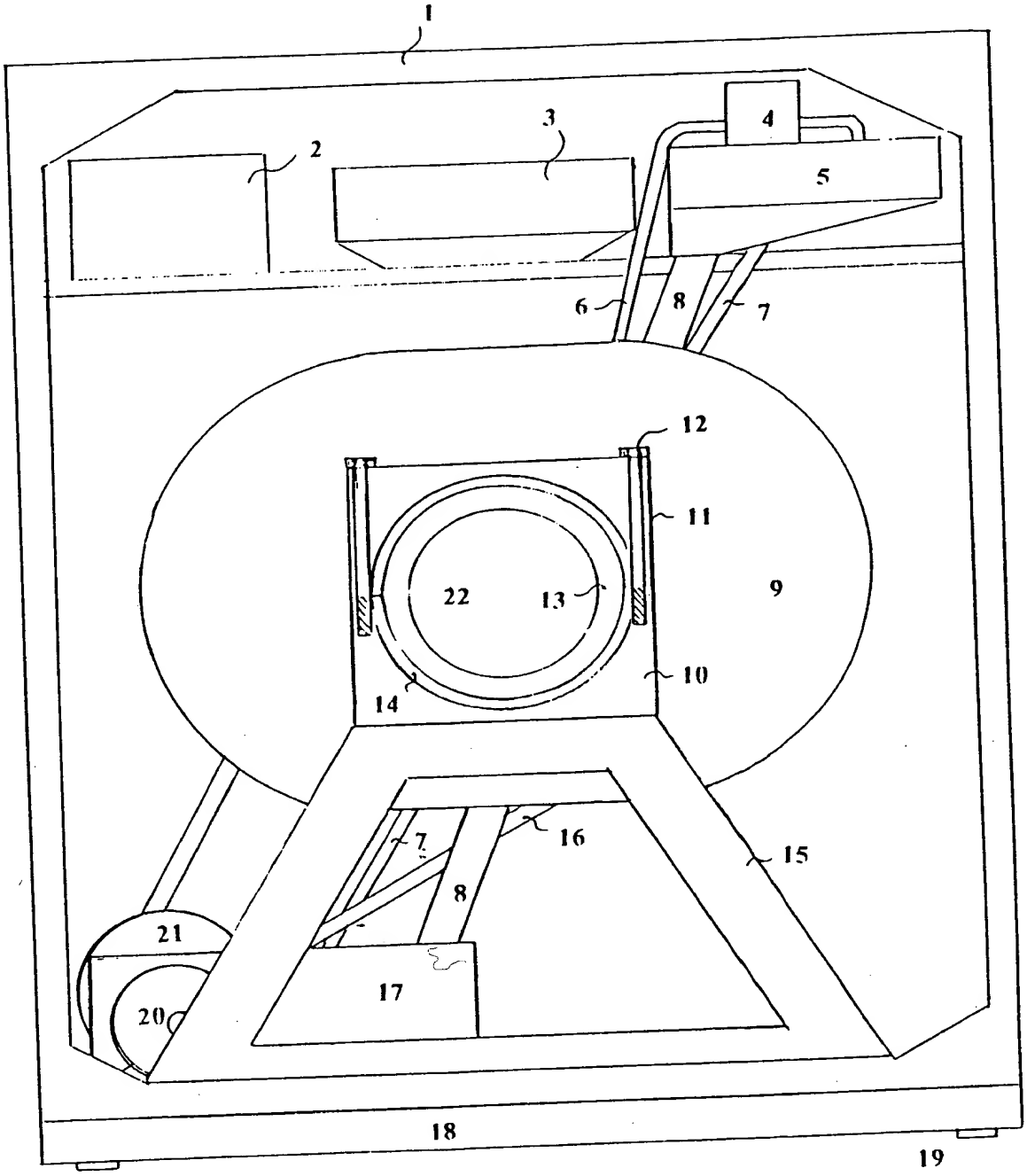


FIGURE 5

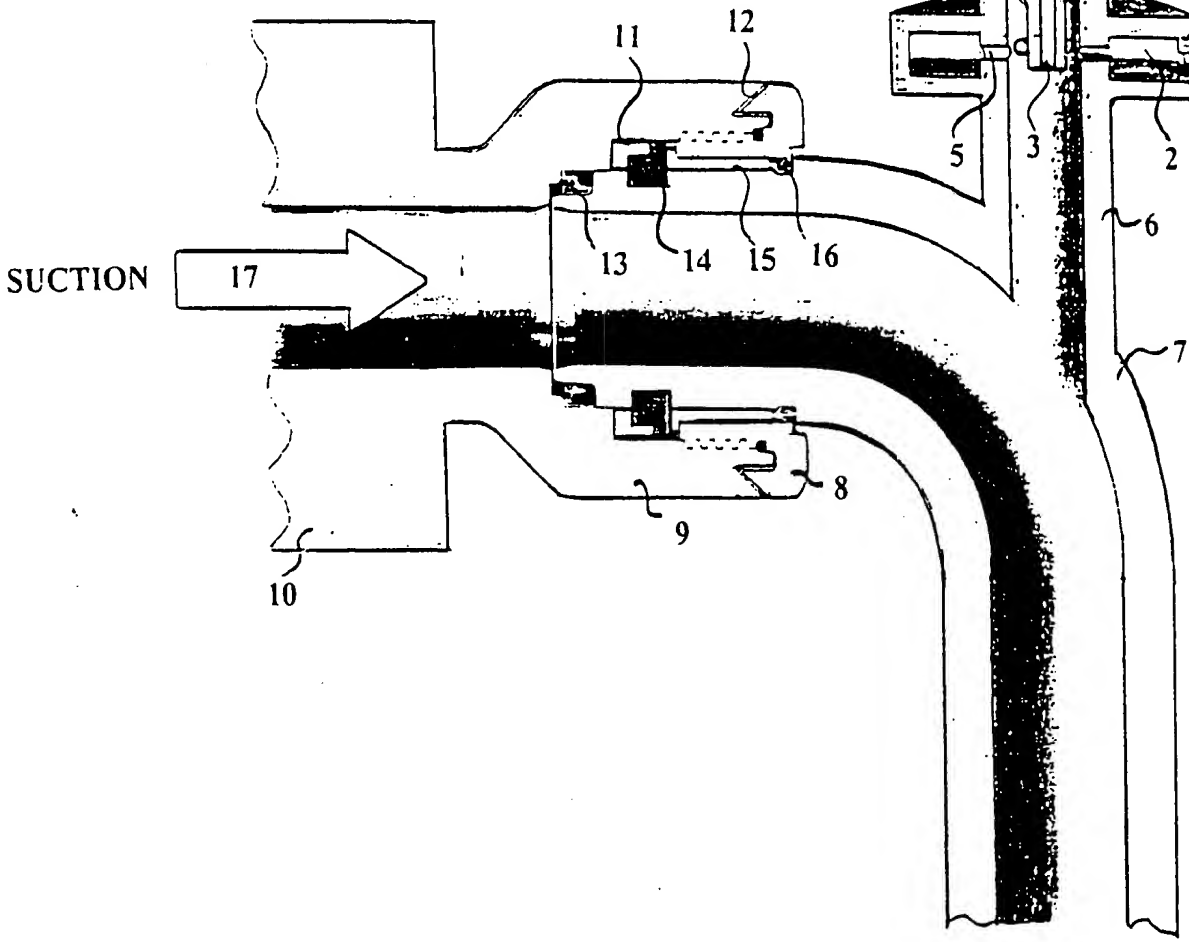


FIGURE 6

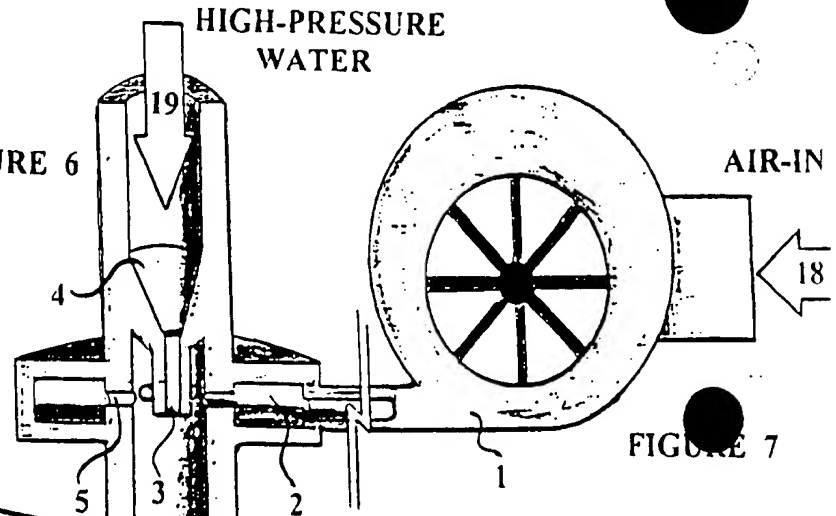


FIGURE 7

FIGURE 8

TOP LOADING

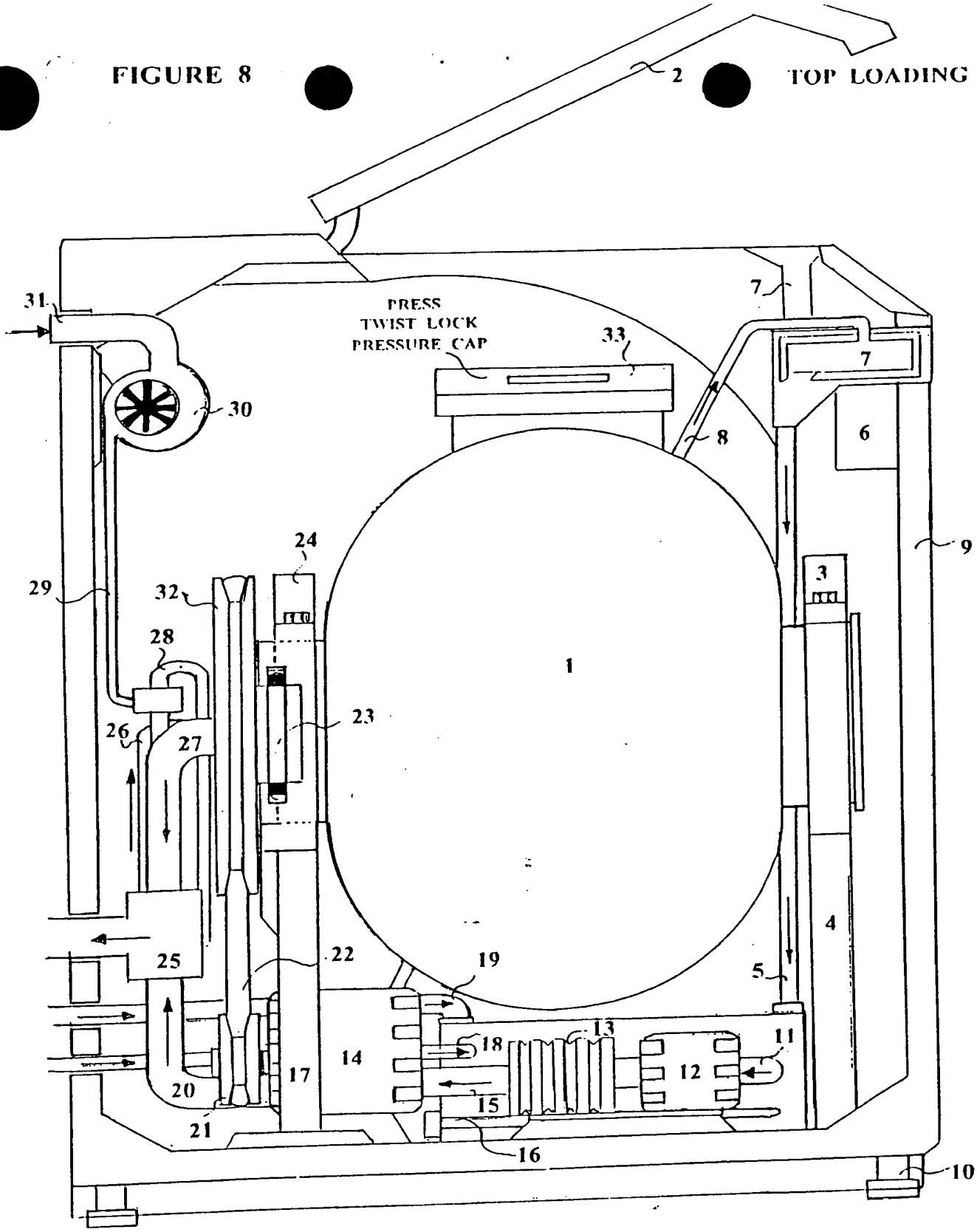
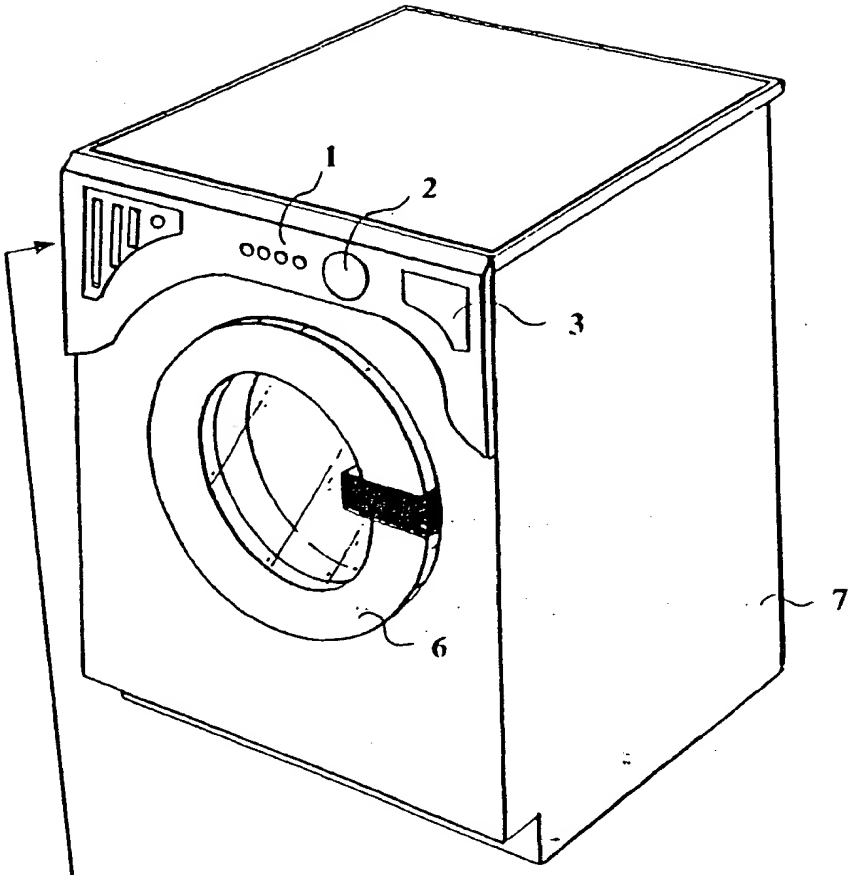


FIGURE 9



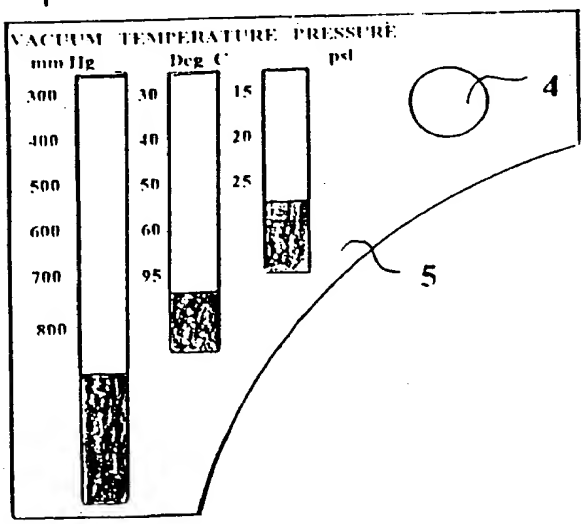
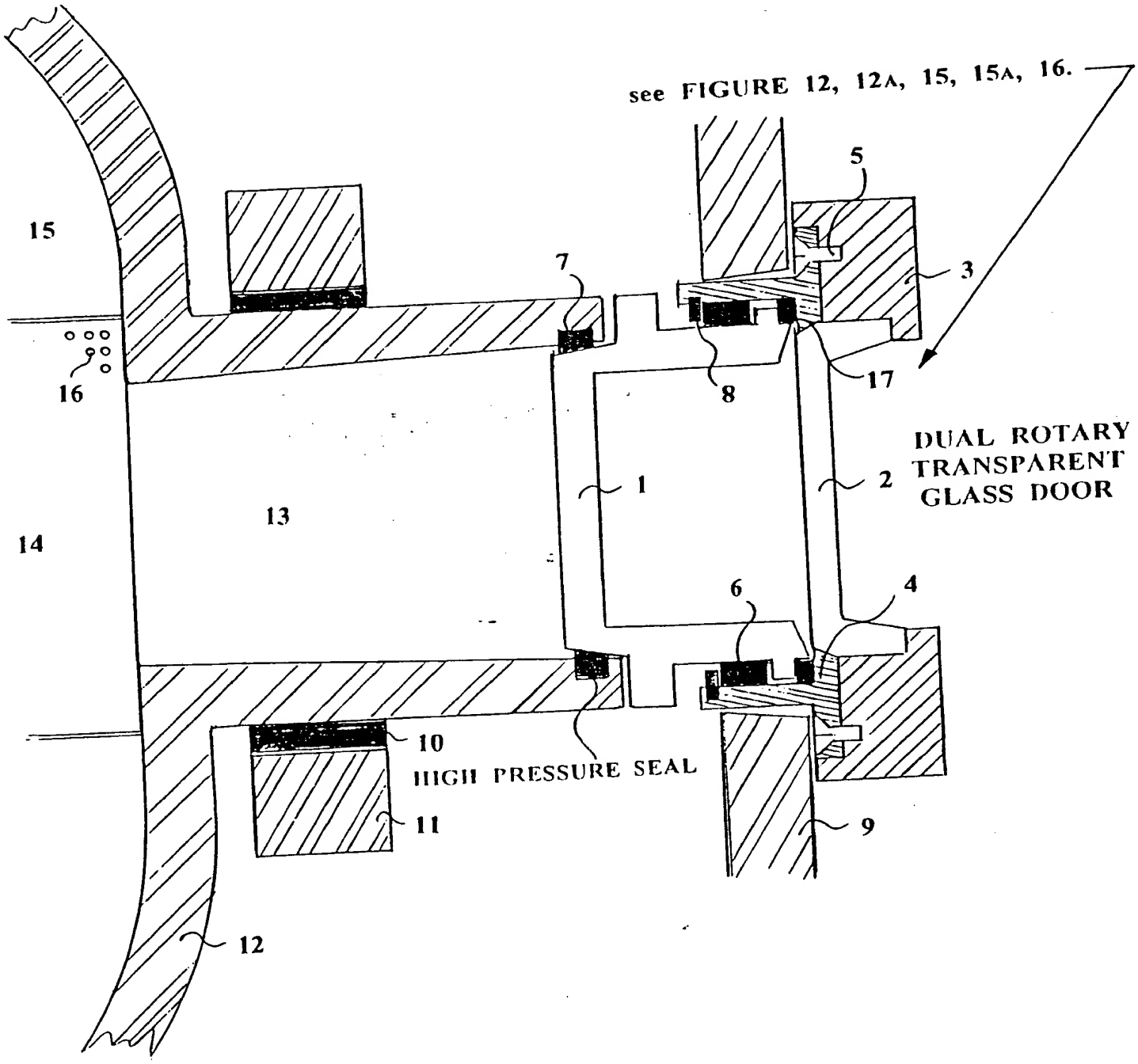


FIGURE 10

FIGURE 11


see FIGURE 12, 12A, 15, 15A, 16.
15
16
7
5
3
8
17
DUAL ROTARY
TRANSPARENT
GLASS DOOR
1
2
13
14
6
4
10
HIGH PRESSURE SEAL
11
9
12

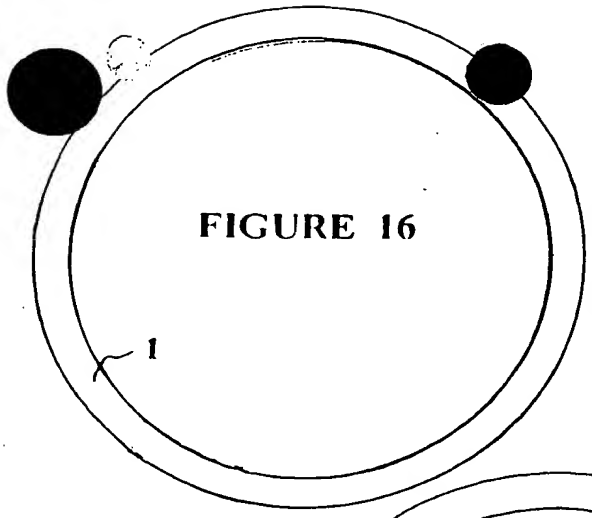


FIGURE 16

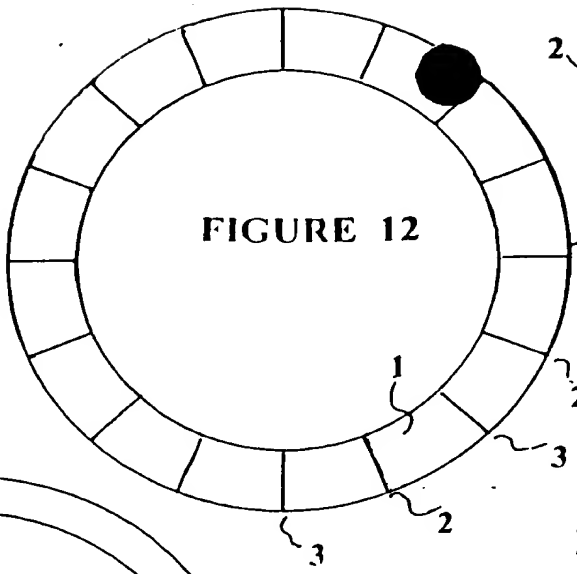


FIGURE 12

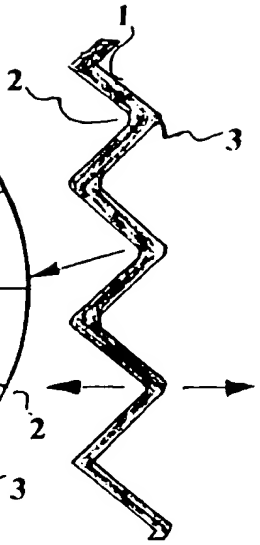


FIGURE 12 A

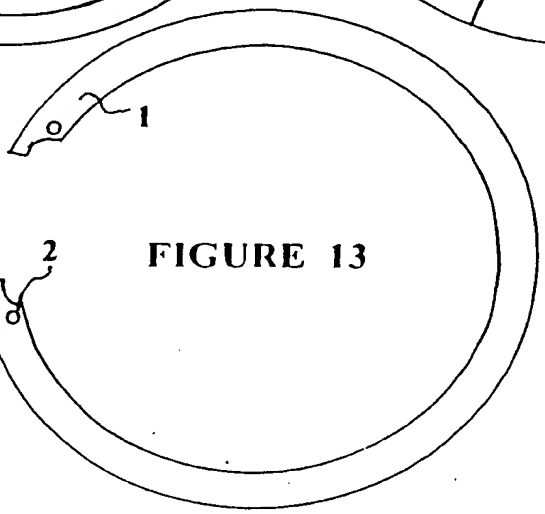


FIGURE 13

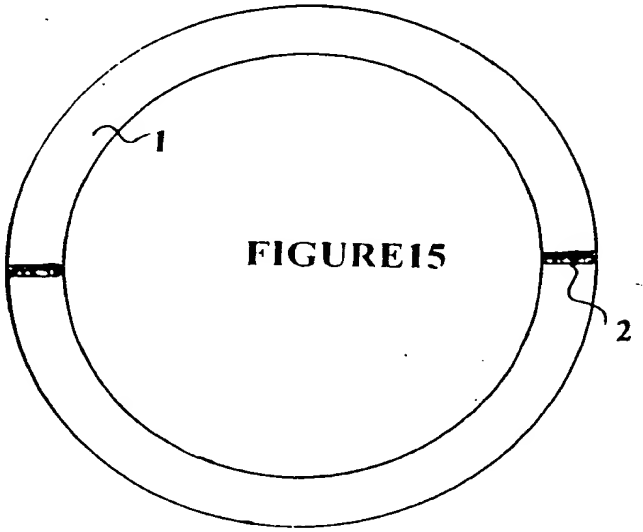


FIGURE15

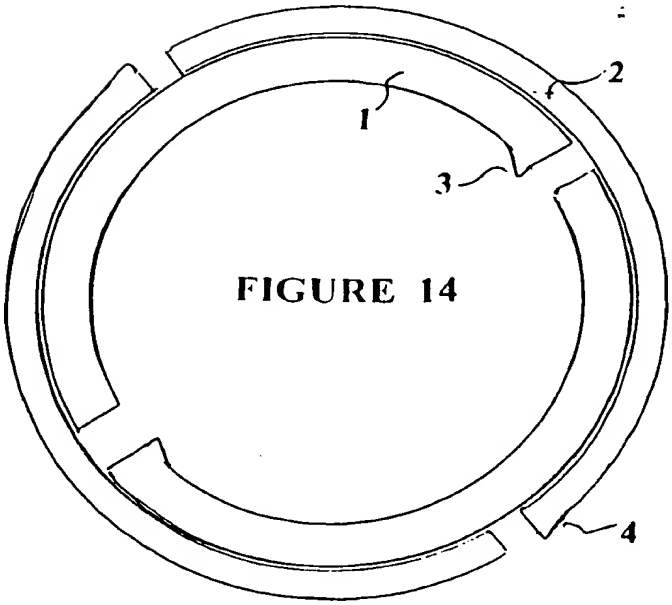


FIGURE 14

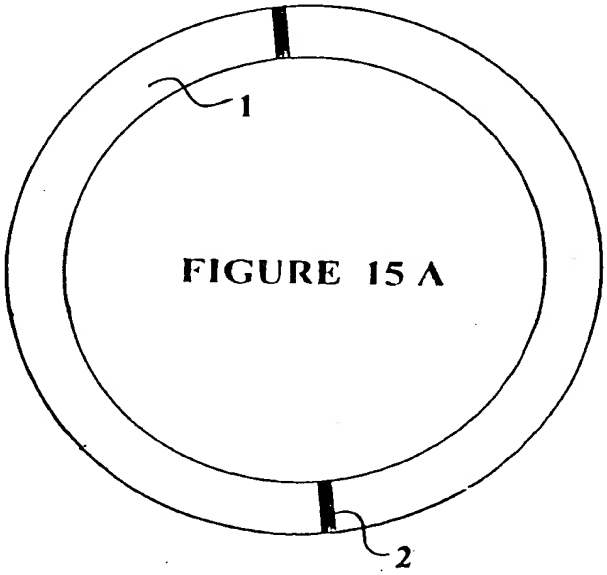


FIGURE 15 A

FIGURE 17

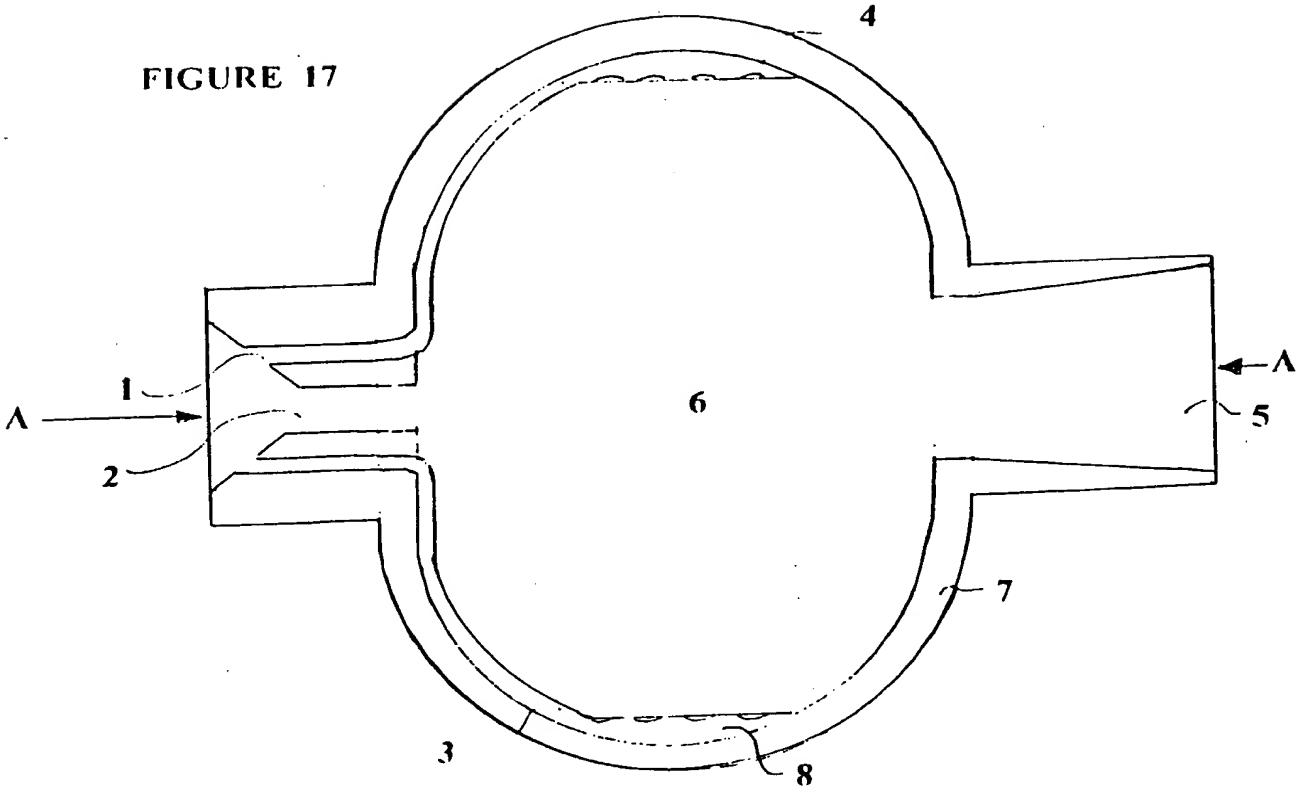


FIGURE 18

SECTION A-A

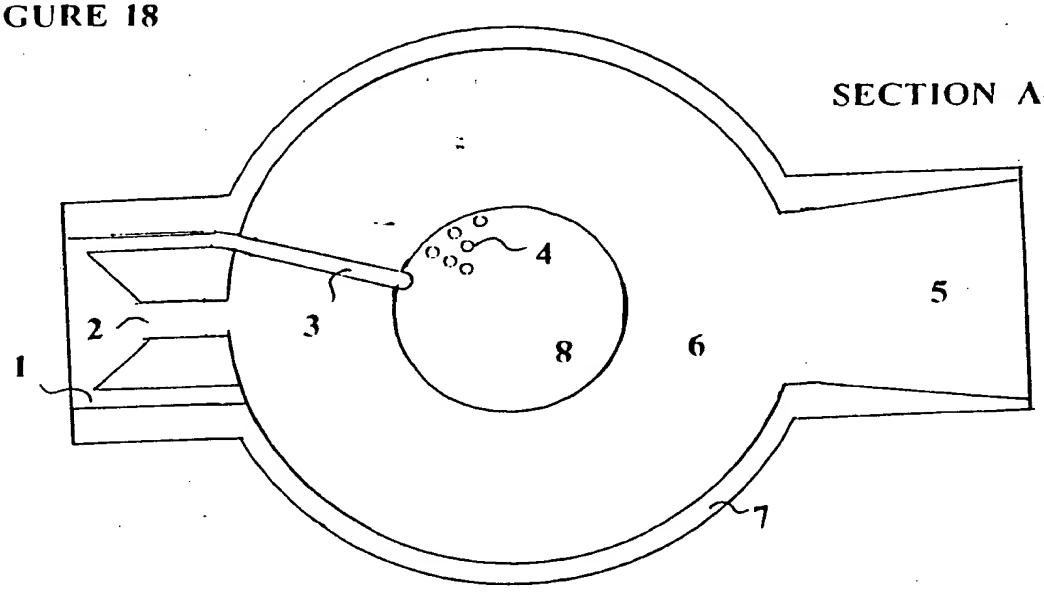
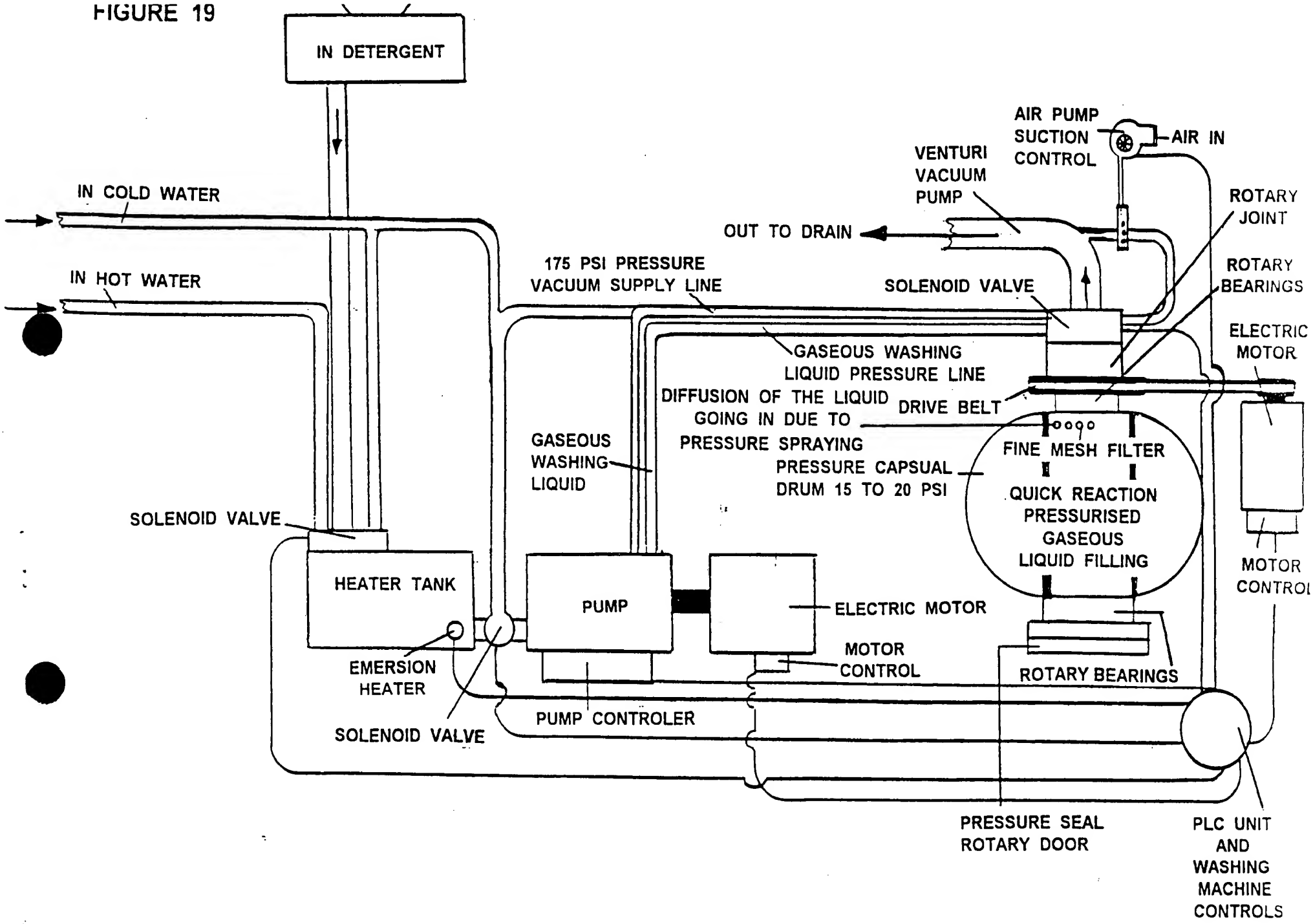


FIGURE 19



LAUNDRY PRESSURE WASHING AND VACUUM DRYING MACHINE
CONTROL SYSTEM SCHEMATIC